INCREASING KNOWLEDGE AND SKILLS OF STUDENTS IN A FLUENCY DISORDERS GRADUATE CLASS

by

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Abstract

The purpose of this study was to examine the impact that a fluency disorders class utilizing teletherapy and experiential learning had on graduate student knowledge and skills in fluency disorders. The method involved creation and administration of a survey consisting of demographic information and thirty-four, five-point, Likert scale questions regarding comfort level when working with clients who stutter. The survey was administered on the first and last day of the semester. The final survey also included questions regarding the overall effectiveness of the class and a seven-component ranking section for students' opinions on the most important aspects of class. As two students were absent on the first day, the initial survey was completed by twenty students and the final survey was completed by twenty-two students. The twenty-two students were split into three groups of seven or eight and focus groups were conducted on the last day of class. Results of the survey indicated that students who took part in the fluency disorders class demonstrated significant changes in 29 of the 34 items, indicating a change in their level of comfort when working with people with fluency disorders. Specific areas of significance included comfort in identifying fluent and disfluent speech, differentially diagnosing children with a fluency disorder, assessing clients, answering questions related to fluency disorders, creating a treatment plan for a client with a fluency disorder, and counseling a client and family members. The results from the focus groups also showed a development of knowledge in many areas for the students. Many themes appeared throughout the focus groups and were compiled into a list and included: Working with attitudes and feelings of clients, counseling, seeing progress and forming a relationship with the client, assignments and the classroom, teletherapy, multiculturalism, program structure and curriculum, client factors, experiential learning, instructor impact, and students' professional development and identity. Overall, students seemed to grow in their

comfort and knowledge of working with people who stutter and as therapists in general. More research regarding instruction and preparation for students on working with people with fluency and other communication disorders is needed.

INCREASING KNOWLEDGE AND SKILLS OF STUDENTS IN A FLUENCY DISORDERS GRADUATE CLASS

Fluency disorders are disruptions in continuity, smoothness, rate, and effort of speech. Stuttering is the most common type of fluency disorder and may include repetitions, prolongations, blocks, interjections, and revisions. Secondary behaviors generally accompany stuttering such as tension, negative reaction, and decreased communication. Disfluencies that resemble stuttering include repetitions of sounds in a word such as "t-t-today," prolongations such as "ssssssssponge," and blocks which are inaudible fixations or the inability to initiate a sound. Stuttering can interfere with school, work, or social interactions and can co-occur with other disorders. According to the American Speech-Language-Hearing Association (ASHA), about five percent of people will stutter during part of their lives. Incidence rates are higher in preschool-age children at a rate of 11% by four years of age. Stuttering is twice as prevalent in preschool boys as preschool girls. By school age, the number of boys who stutter is three to four times more than the number of girls. Among all age groups, the prevalence of stuttering is about 0.72% (ASHA, 2014a). Research has shown that higher rates of stuttering have been recorded in children with genetic syndromes.

Causes of stuttering are extremely diverse and are unique to each person. They include certain genetic and neurophysiological factors but do not include emotional problems. Environmental factors, although not a cause, may increase disfluency. Although definitive findings have not been made, some research supports genetic factors, indicating that mutations in three genes could lead to a disruption in the signal that directs enzymes to their target location in the lysosome of the cell, resulting in stuttering. Recent studies have shown structural and functional neurological differences in children who stutter. (ASHA, 2014a).

Treatment for fluency disorders is individualized with many factors taken into consideration by the team planning treatment. The team must consider the child and family priorities, the degree to which the child's disfluent behaviors and communication are influenced by different disorders, and the extent to which the stuttering affects the client's life. Goals focus on minimizing difficulties, reducing the effort used to hide disfluencies and communicating with ease (ASHA, 2014a).

For decades, researchers have found that Speech-Language Pathologists (SLPs) do not feel comfortable working with people who stutter. SLPs are less comfortable and less knowledgeable working with stuttering than any other communication disorder (Yaruss & Quesal, 2002; Kelly et al., 1997). They lack confidence with, have negative attitudes towards, and are not prepared to work with people with fluency disorders (Mallard, Gardner, & Downey, 1988; Kelly et al., 1997; Yaruss & Quesal, 2002). This is, in large part, due to the lack of academic and clinical training provided to speech and language pathologists when in school (Mallard et al., 1988; Kelly et. al, 1997). Many clinicians agree that they do not have enough training, which is why they lack knowledge and confidence (Mallard et al., 1988). Kelly et al. (1997) found that 83% of the speech and language pathologists in their sample believed more coursework in stuttering is needed at the master's level. In their study of 157 school SLPs, 48% reported inadequate skills in the areas of treatment methods, experience with clients who stutter, diagnostic methods, and the nature of stuttering.

Tellis, Bressler, and Emerick (2008) examined school SLPs' knowledge of and skill levels when assessing and treating people who stutter. The survey included 49 questions that addressed specific aspects of assessment and treatment as well as general questions about stuttering. The results of this study showed that certified SLPs lacked basic knowledge and

skills in assessing and treating stuttering. For example, of the 255 SLPs that participated in the study, 37.3% reported that they could not accurately identify the onset characteristics of stuttering, 87.3% did not know about the latest genetic research in stuttering, and high percentages did not know about specific websites and resources for people who stutter.

ASHA creates requirements for future SLPs to graduate and gain licensure. In 1997 ASHA required 25 hours of clinical practicum specifically devoted to fluency disorders. However, in 2002 this requirement was eliminated for graduate students: a graduate student can now graduate with zero clinical hours devoted specifically towards fluency disorders (Yaruss & Quesal, 2002). This change in requirement has increased the number of students who can graduate without any hours devoted to fluency disorders from 18% in 1997 to 22.6% in 2002 (Yaruss & Quesal, 2002). This change in requirements also means that there is no required minimum number of supervised clinical hours in diagnosis and or treatment of stuttering by applicants for the CCC-SLP (Kelly et al., 1997). According to the 2014 *Standard IV-C*, applicants must demonstrate knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates in a list of areas, including fluency. It is expected that course work will address these at the graduate level. *Standard IV-D* states that applicants must demonstrate current knowledge of principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders. *Standard V-B* states that for certification, applicants must have completed a program of study that included experiences "sufficient in breadth and depth" to achieve certain skill outcomes including evaluation, intervention, and interaction and personal qualities, listed in ASHA's certification requirements (ASHA,

2014b). These must be demonstrated by direct client/patient contact in clinical experiences, academic course work, labs, simulations, examinations, and completion of independent projects. It also states that the applicant must have obtained a "sufficient variety" of supervised clinical experiences in different work settings and with different populations so they can demonstrate skills across the range listed in the requirements (ASHA, 2014b). Rather than a set number of hours or coursework, certification applicants must have a "sufficient" amount of work with clients in various areas. These vague requirements are the reason for the minimal amount of coursework and clinical hours in fluency disorders offered in graduate schools.

Speech and language pathologists' knowledge gap in the area of fluency disorders begins with the lack of clinician training received during graduate school. Graduate coursework and clinical practicum specific to fluency disorders is no longer required of schools by ASHA; therefore, many graduate programs do not offer these classes to their students. Graduate students can graduate without any coursework specific to fluency disorders, and even more graduate without any clinical training in stuttering (Mallard et al., 1998; Kelly et al., 1997; Yaruss, 1999; Yaruss & Quesal, 2002). Yaruss and Quesal (2002) surveyed 159 programs in SLP coursework and clinical training and found that one-fourth of programs allowed students to graduate without coursework in fluency disorders and almost two-thirds allowed students to graduate without clinical practicum experiences. Some programs allow students to graduate without any graduate or clinical training in stuttering at all. (Yaruss & Quesal, 2002). Surveys by Yaruss and Quesal (2002), Mallard, Gardner, and Downey (1988), and Kelly et al. (2002) have all shown that working clinicians graduated with very few to no hours in class or clinical training specific to fluency disorders. The

clinicians who took the surveys reported little confidence and knowledge in this area, perhaps because of this lack of training. Klein and Amster (2010) examined the difference in knowledge between undergraduate students without a course in fluency disorders and graduate students after participating in a course in fluency disorders. A questionnaire was given regarding students' personal beliefs about the causes of stuttering. A significant difference was found between the two groups. Graduate students listed significantly more biological and social-environmental factors than did the undergraduate students. This supported the hypothesis that taking a course in fluency disorders is related to an increased general knowledge in stuttering (Klein & Amster, 2010). St. Louis et al. (2013) examined the difference in undergraduates' and graduates' attitudes towards people who stutter. The *Public Opinion Survey of Human Attributes-Stuttering* (POSHA-S) was given to students to examine factors that may affect SLP attitudes toward people who stutter. They found that graduate students had significantly more positive attitudes towards people who stutter, concluding that more coursework in fluency disorders relates to a more positive attitude towards people who stutter.

Researchers have shown a desire for more preparation and practice in training speech and language pathologists. Mallard, Gardner, and Downey (1988) called for better preparation for professionals to work with stutterers; Yaruss and Quesal (2002) called for the profession to identify alternate ways of preparing student clinicians to appropriately and effectively evaluate and treat fluency disorders. Many others, including Kelly et al. (1997), believe there is a need for instructors to help bridge the gap between knowledge and practice when it comes to stuttering. They suggest increased clinical relevance of in-service programs in fluency and a need for a better method for educating speech and language pathologists in

training (Kelly et al., 1997). Even after Mallard, Gardner, and Downey (1988) first raised concern 27 years ago, and Yaruss and Quesal (2002) echoed that concern 12 years later, preparation has not improved significantly. In fact, preparation and practice with fluency disorders continues to decrease with ASHA's decreasing requirements (2014b).

Many surveys and questionnaires have examined SLP students and clinicians and their knowledge, skills, and attitudes toward people who stutter. Over a period of seven years, the ASHA Division 4 Steering Committee created guidelines for practice in stuttering treatment. Gottwald, Amster, and LaSalle (2010) created a checklist to be used as a guideline for clinical supervisors to assess graduate student proficiencies in stuttering. This checklist is also helpful in assessing academic knowledge of graduate students after a fluency course. The checklist uses ratings from *very incompetent* to *very competent* and includes skills such as continuity and types of disfluencies. This is a useful tool for professors and supervisors; however, ASHA does not officially endorse its use as policy and its use is not required for licensure (Gottwald, Amster, & Lasalle, 2010). A different survey, the POSHA-S, mentioned earlier, was developed to make available a way to measure public attitudes toward stuttering that is practical, reliable, and valid. It uses direct and neutral wording to measure public attitudes. It results in an Overall Stuttering Score (OSS) and three subscores: beliefs about persons who stutter, self-reactions to people who stutter, and obesity/mental illness. This survey has a growing database archive that will allow for users to compare their results to the overall results. This survey can also be very useful for SLP students (St. Louis, 2011). The *Communicative Disorders Students' Attitudes Toward Stuttering* (CATS) is another survey that is used to provide a means for assessing clinician's professional knowledge and attitudes toward the nature and treatment of stuttering. This inventory is unique in that rather than

comparing subgroups equally, CATS samples a variety of views regarding nature, treatment and clinician competence in stuttering (St. Louis & Lass, 1981).

One study that attempted to improve graduate students' experience in the classroom was associated with a treatment program at La Trobe University in Australia. This program was for adults who stutter and was conducted by speech and language pathology students under the supervision of three university staff members who were experienced in both stuttering treatment and clinical education. The program suggested that one way to increase confidence in working with people who stutter is to provide them with "relevant and stimulating clinical experience during professional preparation" (Block, Onslow, Packman, Gray, & Dacakis, 2005, p. 455). The program included 78 adults who were treated in one of five consecutive treatment programs during a three-year period, and the treatment method was Smooth Speech, an intensive speech restricting treatment. The study was carried out to determine if the clinician-supervised student clinic could provide the same quality therapy as certified clinicians and at the same time provide effective clinical education for student clinicians. Students were supervised in all aspects of the program, and some of the work with the clients was videotaped. Two students were assigned to one client throughout the program. The results of the follow-up showed that outcomes for stuttering, speech naturalness, and client self-reports were comparable with existing reports of similar programs carried out by certified SLPs: about half of the clients had post-treatment natural scores near or in range of normally fluent speakers. Students felt adequately prepared to treat people who stutter after participating in the program. The clinical and academic experiences were integrated within the university setting, which facilitated learning in the clinical setting. Students engaged in peer or collaborative learning and had experiential learning because they were able to

participate in the clinical process with increasing independence. The present study is somewhat similar to Block et al (2005), as it is a way to incorporate stimulating experience directly with clients in the classroom.

Only a few studies exist that examine the impact of classroom experiences on graduate student learning in the field of communication sciences and disorders. More research is clearly needed. The current study examines the use of a particular way of teaching a fluency disorders class on graduate students' knowledge and skills acquired in the course. It expands on previous research related to graduate student preparation in stuttering and offer a new method of learning. This study investigated how experiential learning impacted graduate students' knowledge and comfort with working with people who stutter. The hypothesis was that students enrolled in a graduate fluency disorders class utilizing experiential learning will significantly improve their knowledge and skills regarding clients with fluency disorders.

Method

1.1 Participants

Participants in the study were 22 female Speech-Language Pathology (SLP) graduate students at Appalachian State University, currently enrolled in a fluency disorders class. Twenty of the 22 students enrolled in the course took a survey on the first day of class. Twenty-two female students participated in the class, completed the final survey, and took part in the focus groups. Of the 20 students who took the initial survey, the average age was 23.8 years. Seven of the 20 had already participated in an undergraduate class in fluency disorders previous to the study, 2 of which were full classes while the rest were half classes (i.e., a combined voice and fluency course), and 13 of the 20 had previously attended a class with a professor who stutters. Four of the 20 have had adult clients who stutter in school clinical settings. Also, 7 students have had family members who stutter and 13 have known someone other than a faculty member who stutters.

1.2 The Class

The 22 graduate students were enrolled in CSD 5663: Disorders of Fluency, a course offered in the graduate curriculum. All students were in their fourth semester of their graduate program of study for a Master of Science Degree in Speech-Language Pathology. The class met from 1:00pm to 3:45pm on 15 Fridays during the Fall Semester in 2014. Class assignments consisted of (1) weekly, informal forum blog-style posts about topics in stuttering, (2) a pseudostuttering experience (see Klein, Cervini, & Clemenzi, 2006 for a description of the assignment), (3) participation in the International Stuttering Awareness Day online conference (http://www.mnsu.edu/comdis/kuster/isadarchive/onlineconference.html), (4) watching eight

to ten recorded teletherapy videos of adults who stutter and writing seven SOAP notes regarding the sessions, and (5) interviewing the assigned teletherapy client via Google Hangout.

Dr. Joseph Klein, the course professor, is a person who stutters. He received his Ph.D. in Communication Sciences and Disorders in 2005. He is an ASHA certified speech-language pathologist. He has treated and/or supervised therapy for clients who stutter for 10 years and has taught 18 graduate-level fluency disorders classes and 10 undergraduate-level fluency disorders classes. Dr. Klein was a mentor of the author of this study and has helped develop and perform the study.

1.3 Survey

A literature review helped determine relevant information about current knowledge and skills for graduate students regarding stuttering. The literature review specifically addressed ASHA requirements, the lack of graduate student knowledge and confidence when working with PWS, and the lack of classes offered and specific clinical hours devoted to fluency disorders generally offered in graduate schools.

Using information from the Gottwald et al. (2010) checklist, as well as surveys created by Klein and Amster (2010), and Tellis, et al. (2008), a pre-teletherapy and post-teletherapy survey was created and given to the graduate students on the first and last day of class, respectively (Klein & Amster, 2010; Tellis, et al., 2008). The survey was handed out to present students during the first class of a graduate course in fluency disorders, on August 24, 2014; two of the students were unable to attend class this day. The students' participation was voluntary and 100% of the students participated. This survey was administered again at the completion of the class- on December 5, 2014. Each question was written to assess

student knowledge and comfort in working with PWS. The initial survey included 10 demographic questions eliciting background (see Appendix A) as well as 34 questions formatted as 5-point Likert scales. The rating scale items were presented in a statement, where students rated their level of comfort by selecting a score from 1 (*very uncomfortable*) to 5 (*very comfortable*). The questions were used to evaluate the students' comfort and knowledge of assessing, identifying, and treating fluency disorders. In the post-survey, along with the original 34 Likert scale question, three opinion questions about the enjoyment of teletherapy, the increase of knowledge due to the teletherapy, and the amount of time spent working on the class were asked on a 5-point Likert scale ranging from *strongly agree* to *strongly disagree*. A fourth question had the students rank aspects of the class from 1 to 7, *most important* to *least important* for their increase in knowledge. The three opinion questions and one ranking question are listed in Appendix B.

1.4 Focus groups

The use of qualitative research is growing in the field of speech and language pathology. In the past, quantitative research methods have been used alone for findings in the field including testing hypotheses, determining typical and atypical speech, and much more. Qualitative research methods are used with quantitative research to form a more detailed result, and can either support or be supported by quantitative research. Qualitative research methods are systematic and are used to answer questions about social actions and experiences (Hammer, 2011). Focus groups are commonly used with various qualitative approaches.

Focus groups are a common method for gathering qualitative data through group interaction on a particular topic determined by the researcher. In a focus group, the

discussion during the group is the source of the data being collected. Focus groups are conducted in formal settings with a facilitator and structured question formats (Morgan, 1996). Participants have an open discussion that is guided and structured by the facilitator.

Focus groups are often combined with surveys in one of four different ways to incorporate qualitative and quantitative research. The first combination includes surveys as the primary method of research and focus groups as the introductory research. Focus groups, in this combination, are generally used to form questions for the survey. The second combination has focus groups as the primary research method and surveys as the initial research. In this case, the survey is generally used to group individuals for the focus group. In the third combination, the survey is the primary method of research and the focus group is the follow up method that helps interpret the results of the survey. This allows for "illustrative material that can be quoted in conjunction with quantitative findings," (Morgan, 1996, p. 134). The last combination has focus groups as the primary method of research and surveys as a follow up method. This combination is used to view the prevalence of themes in the focus group.

Surveys and focus groups have been used in communication disorders research in the past. One specific example is the use of this combination to determine the effectiveness of a service learning experience on students' skills. In a recent study by Altosino and Armstrong (2014), 31 graduate students helped develop and facilitate a workshop on the prevention of communication disorders for "at-risk" families. The survey and focus group assessed students' abilities to apply academic, clinical, and personal skills during the service learning experience. Audio and video recordings were used and responses were organized into

themes. The focus group in this case was used to confirm and expand on the findings from the questionnaires.

Ten open-ended questions were developed by the instructor, colleagues, and author for the focus group discussion. The questions focused on the opinions about the teletherapy, the relationship between lectures and the observed teletherapy, and students' suggestions for future classes.

1.5 Data Analysis

Descriptive statistics were used to calculate means and standard deviations of the Likert scale data. A mean of one would indicate that all participants felt uncomfortable while a mean of five would indicate that all participants felt completely comfortable performing the task. Likert scores were analyzed using *t*-tests. To reduce the chance of error due to the large number of tests being completed, researchers used a *p*-value of .05/34 (for the 34 questions), or .0015 for all analysis. Audio recordings collected from the focus group were transcribed and analyzed. Responses were organized into themes, and themes were counted based on frequency of occurrence throughout the discussion.

Numerous studies that use surveys use *t*-tests to analyze data for pair-wise comparisons. Reasons supporting using t-tests include: *t*-tests show when underlying assumptions are not obtained, such as skewness, they are well-known, making them easy to understand by users world-wide; *t*-tests are easy to calculate; and they can be run on small samples (St. Louis et al., 2014). Using the *t*-tests with large Bonferroni correction of $p \leq .0015$ (.05/34), i.e., dividing the *alpha* level by the number of questions analyzed, requires a substantial difference to reach a significant difference. This method will reduce the chance of making Type I and Type II errors.

1.6 Timeline

The participants began by taking the survey at the beginning of the first class period of the semester, on August 22, 2014. Students were enrolled in a fifteen-week, graduate level course in fluency disorders. Each participant retook the survey at the conclusion of the semester, on December 5, 2014.

Results

Results indicated that students who took part in the fluency disorders class demonstrated significant changes in their level of comfort when working with people with fluency disorders evidenced by the pre- and post-surveys and the focus group responses. A list of question items, pre- and post- mean scores, and significance are shown in Table 1. Of the 34 survey questions, 29 showed significant differences (*p*-value at or below .0015), indicating significant change in student's comfort level identifying and describing, diagnosing, discussing, and treating clients with fluency disorders. Pre- and post- survey means were compared and are shown in Figure 1. Specific areas of significance included comfort in identifying fluent and disfluent speech, differentially diagnosing children with a fluency disorder, assessing clients, answering questions related to fluency disorders, creating a treatment plan for a client with a fluency disorder, and counseling a client and family members.

Significant change was not found for every item. Several were not significant, including comfort in finding information about stuttering on the internet, comfort in working with adults who stutter, comfort working with adolescents who stutter, comfort working with children who stutter, and comfort working with parents of children who stutter. All of these survey questions had a post-test mean of 3.9 or above and a pretest mean of 3.0 or above, indicating that students feel comfortable in these areas and felt moderately comfortable before the class began.

Included in the final survey was a list of seven class components. The graduate students ranked these in order of most important to least important, one being *most important* and 7 being *least important*. Table 4 shows the median and mode of each component. Students ranked watching the teletherapy videos and writing SOAP notes as the most

important aspect of the class with a median and mode of 1. They then ranked having a professor who stutters teach the class and interviewing a person who stutters as the next most important. These top three ranked aspects of the class involve actual interaction with a person who stutters. The fourth, fifth, and sixth ranked aspects include classroom assignments and the lowest ranked aspect of class according to the students was reading the textbook. These rankings support the utilization of a discussion-based rather than textbook and lecture based class.

The results from the focus group showed a development of comfort and knowledge in many areas for the students. Students were divided up into three focus groups of seven or eight participants. They discussed aspects of the class they enjoyed the most, aspects of the class most helpful in aiding their learning, and suggestions as to how to improve the class. Focus group questions are listed in Table 2. The three focus groups were audio recorded and transcribed verbatim by the first author. Investigator triangulation was used to view the data from different points of view. The author, Dr. Joseph Klein, and Dr. Michael Howell each analyzed the transcriptions independently and identified multiple themes mentioned in the focus groups. The lists were compiled and investigators compared their findings, came to a consensus, and created a master list of themes based on conceptual agreement. All three assessors reached agreement on the final themes. Themes included: students' professional development and identity, seeing progress and forming a relationship with a client, teletherapy, program structure and curriculum, counseling, assignments and the classroom, client and clinician factors, experiential learning, working with attitudes and feelings of clients, instructor impact, and multiculturalism.

The most important theme that appeared throughout the focus groups may have been the *students' professional development and identity*. This theme included many subcategories. The students gained knowledge and understanding of stuttering and stuttering therapy, including understanding that this therapy is not about numbers and percentages but rather conversational based. They also learned many types of therapy, and that the therapy was client directed. They mentioned their opportunity to view adult therapy, which was new to them. One important subtheme was the increase in student's confidence and their own self-assessment. This may have been the best indicator of how this class has prepared the students for their future as therapists. Some quotes from this theme include:

> "…this is maybe the first class I feel that I could get a fluency client tomorrow and know where to start."

One example of a student who discussed her growth in self-assessment during therapy is shown:

> "…when you actually can make judgments on yourself and say that was awful, thank God nobody saw me. I can fix this."

Students mentioned multiple times that they enjoyed following the client throughout the entire therapy process. They enjoyed the *pseudo-relationship* they formed with the client, having become invested in the client's progress, which motivated them to want to watch the videos. Responses included:

> "…having this class and having to go through that experience of seeing a client one hundred percent, I feel like it prepared us a lot more than maybe other people coming out of school with just a lecture experience."

> "The class focused a lot on the ways you can develop a relationship with your client and really listen to how they feel and how they want to pursue therapy…"

Teletherapy was mentioned often throughout focus groups. Students discussed that the teletherapy integrated into the class and that they were able to see what they were learning about in class in an actual therapy session. The students could see how grateful the clients were for receiving therapy and the impact it had on their lives. Related quotes include:

> "…teletherapy clients just really reiterated everything we learned in class; it was an opportunity to view what our professor was teaching us into practice rather than just hearing about it. Most of the things he taught in class were seen at some point during therapy."

> "Learning those strategies and then being able to see them in therapy helps a whole lot because a lot of times you just learn the therapy but then to see actually go through the whole process."

The *program structure and curriculum* was mentioned throughout the focus groups. Students explained that taking this class while taking a Voice Disorders class was extremely difficult to do at the same time because of the amount of work each required. They also would have preferred to take these two classes before taking the praxis and mentioned that they would have liked to take an additional class specifically devoted to counseling. Specific quotes from this theme include:

> "…a lot of this class and voice class is on the praxis so it would have been nice to have it before."

> "This class plus Voice is a lot in one semester."

"…someone should teach [counseling] in their classes… we need to know about counseling."

The theme, *counseling* was also an important theme. Students discussed that they had not received much training on counseling in their other classes. They also mentioned that this aspect relates to all areas of being an SLP. One specific quote mentioned about stuttering was:

"I think that the counseling aspects we learned in class are really important because we don't get them other places and they will come up again."

The students had numerous opinions on many aspects of the *classroom and the assignments*. For example, students felt the pseudostuttering assignment was extremely helpful but disliked the required journal entries. They mentioned many times that the class was a lot of work, but it was enjoyable work. They seemed to enjoy International Stuttering Awareness Day and enjoyed how the classroom was extremely discussion-based. Specific responses relating to assignments and the classroom experience include:

"I enjoyed the pseudostuttering experience; it was just interesting to put myself into a potential client's shoes."

"Something I really liked about class though that I don't think we talked about is just how open and discussion based it was."

"I feel like our classroom experience was kind of like the therapy, the way he just kind of asked them and just waited, like it was kind of the same style."

Client and clinician factors was another theme mentioned many times throughout the focus group. Client factors included extratherapeutic factors, or factors that the client brings

to therapy such as motivation, wisdom, strengths, and weaknesses, were repeated throughout the discussions. Two specific times it was mentioned in the discussion included:

> "…they came up with really good goals for themselves. And you just let them think and then the next week he'd ask them how it went."

> "…it's okay to not know what to say sometimes and just leave the floor open for the client to just keep talking and air all their feelings out could sometimes be the best thing instead of trying to give advice."

Experiential learning was another topic that appeared throughout the focus groups. One specific comment mentioned was:

> "I feel like I learn best by watching and then getting the opportunity to participate and you don't really get that experience from a lecture or a book."

The *working with attitudes and feelings of clients* theme included comments on the clients' acceptance and empowerment. Student's discussed the importance of client goals and their locus of control. Specific quotes from this theme include:

> "…acceptance is one of the biggest steps you can take with a person to have them be okay with their stuttering."

> "…it's more making the client feel empowered to communicate freely."

> "It's okay to give the client lead and rein."

Having a professor who stutters and knows a lot about fluency disorders was a topic of much conversation throughout the focus groups. Comments included:

> "…even our random questions; he finds a way to answer. And it's just crazy how much he knows. And he's willing to answer anything or explain anything to you. He'll take the time."

Because the teletherapy clients were international, the graduate students were able to see cultural differences. The following is a quote related to *multiculturalism*:

> "One thing I learned that was really interesting was the cultural impact of how where my client lived; like how his family and how his culture viewed his stuttering."

Discussion

The purpose of this study was to examine the impact of a graduate class that included experiential learning on the perceived knowledge and skills of graduate students. Results indicated that students who participated in the fluency disorders class increased their comfort level in understanding, diagnosing, assessing, and treating clients with fluency disorders. These findings help validate that a full, three credit class in fluency disorders can significantly improve student's understanding and comfort level in treating people who stutter. Students perceived watching videos of therapy and writing SOAP Notes as the most important factors in the increase of their knowledge and comfort regarding fluency disorders. Main categories of improvement included identifying and diagnosing fluency disorders, assessing clients with fluency disorders, answering questions about and explaining fluency disorders, and creating and implementing a treatment plan.

Many significant responses were obtained in regards to identifying and diagnosing fluency disorders. Before the class, students were least comfortable differentially diagnosing developmental stuttering from other fluency disorders such as cluttering, neurogenic, and psychogenic stuttering, as well as malingering. After the class involving the teletherapy, the mean score was more than doubled. This showed an increase in knowledge of what different fluency disorders are and how to diagnose them. Other similar areas of significance included identifying normally fluent and disfluent speech and differentiating between the two, and identifying the onset characteristics and core behaviors of stuttering.

Comfort in assessing individuals with fluency disorders was a great area of improvement after the class as well. Students reported a significant change in their comfort obtaining representative speech samples, assessing use of avoidance and secondary features

of stuttering, using appropriate diagnostic tests, and identifying environmental variables that may be related to the stuttering. This all shows an increase in knowledge of assessing clients with fluency disorders due to the implementation of the teletherapy in the fluency disorders class.

Students' increase in knowledge of fluency disorders during the class was apparent as their comfort level with answering questions related to fluency and explaining fluency increased. Students felt significantly more comfortable after the class answering client's and parent's questions regarding the cause of, incidence of, and chances of recovery from stuttering. They also increased their comfort in explaining evidence based treatment options. Comfort and ability answering questions related to stuttering indicates an increase in knowledge of the disorder. This finding implies successful outcomes related to the teletherapy used in the class.

Most importantly, significant increases were reported by students in the area of creating and implementing an effective treatment plan for clients with fluency disorders. Students felt more comfortable constructing a treatment program, adapting the program, utilizing counseling skills, helping clients and families towards acceptance, connecting them with support systems, and writing evaluations and tallying disfluencies. Because many students and even many SLPs today feel uncomfortable treating clients with fluency disorders, this is a major finding in the area of teaching and working with clients who stutter. This result supports the use of teletherapy in a discussion-based fluency disorders class, and supports the effectiveness of this style of teaching.

Few survey questions did not see a significant change from before and after the class. This may be due to the wording of the survey question. The survey questions that proved

insignificant were worded “I am comfortable working with…” rather than “I am comfortable treating…” This may account for the high initial pre-survey means that could lead to the lack of significance in the post-survey means. The pre-survey means were at or above a 3.00, leaving little room for change in a 5-point Likert-scale questionnaire.

These positive findings were validated by the focus groups. The students found that the most important aspects of class included the professional identity they formed, the relationship with the client they were assigned, viewing the teletherapy, the structure of the classroom, and the integration counseling. The focus groups provided qualitative feedback from the graduate students who participated in the class. They add to quantitative feedback by providing specific thoughts and opinions of people directly involved in the research. Students found that this class prepared them for their careers and gave them confidence in their skills as a future SLP. They mentioned that it was the first class in which they felt that they could have a client and know exactly where to start. Among other firsts, students discussed that this was the first time they were exposed to adult therapy as well as the first time counseling was mentioned in the classroom. This qualitative data can be used with the surveys to further demonstrate the impact this class had on graduate student’s perceived knowledge and skill in fluency disorders.

The limitations of the study included the small sample size and that all data comes from students attending the same class. Further research is needed to understand the effectiveness of a fluency disorders class that includes teletherapy of clients for an entire treatment process. Future research with larger sample sizes and different classes and instructors is needed. Research should also include levels of changes in fluency disorder classes that do not include telepractice to account for the change in comfort due to other

aspects of the class, such as lectures and textbooks. Studies can be done with and without professors who stutter to account for the difference in comfort due to this difference.

Dr. Klein showed enthusiasm for this method of teaching and its future use. He believed that having the students watch the therapy with the same client over several weeks was extremely helpful for the students because whether they got to see a change or not, they learned a lot about the process. He also believed the interview was important and allowed the students to watch an experienced clinician perform therapy. Having a person who stutters teach the class was also an area Dr. Klein believed was important. Dr. Klein may eliminate the journals in future use of this class because of the feedback from the focus groups. He would suggest this method to other instructors and believed that they can have the same impact using three or four clients rather than nine. He also discussed the importance of teaching students about holistic therapy and counseling aspects. When performing therapy, Dr. Klein suggests instructors learn about the people who stutter so they can incorporate client factors and values into their therapy plans. Dr. Klein plans on continuing this method in his classes in the future by choosing a few of the clients for the students to watch and learn from.

Studies indicate that SLPs are less comfortable and less knowledgeable working with stuttering than any other communication disorder. SLPs lack confidence working with people with fluency disorders, in large part due to the lack of academic and clinical training provided to SLPs when in school (Yaruss & Quesal, 2002; Kelly et al., 1997; Mallard et al., 1988). More training is needed in the area of fluency disorders in both the clinic and the classroom. Because specific clinical hours devoted towards fluency disorders have been eliminated, fluency disorders in the classroom must provide efficient training that

supplements the loss of required hours (Yaruss & Quesal, 2002). The method of teaching used in this study attempts to compensate for the lack of specific clinic hours devoted to fluency disorders by including videos of teletherapy with clients into the class. This study suggests the effectiveness of this technique; however, further research is needed for support.

Table 1. Pre- and Post- Class Student Perceptions.

	Question	Pretest Mean (s.d.)	Posttest mean (s.d.)	*P*-value
1.	Identify fluent or stuttered speech by describing continuity, rate, and effort.	2.20 (.768)	4.05 (.686)	.000 *
2.	Identify disfluencies by type (blocks, prolongations, repetitions, etc.).	2.85 (.221)	4.65 (.131)	.000 *
3.	Describe effortful behavior and its anatomic/physiological source (e.g vocal straining) as it relates to stuttering.	1.70 (.193)	3.85 (.131)	.000 *
4.	Address the needs, values, and cultural/linguistic backgrounds of the client and family when conducting assessment and/or treatment for stuttering.	2.70 (.206)	4.00 (.162)	.001 *
5.	Differentially diagnose developmental stuttering from other fluency disorders such as cluttering, neurogenic, and psychogenic stuttering, as well as malingering.	1.45 (.114)	3.25 (.216)	.000 *
6.	Differentiate between a child's normally disfluent speech, the speech of a child at risk for stuttering, and the speech of a child who has already begun to stutter.	1.60 (.169)	3.65 (.150)	.000 *
7.	Obtain representative speech samples to evaluate for stuttering frequency, duration of stuttering, and speech rate.	2.30 (.206)	4.25 (.160)	.000 *
8.	Assess clients' use of sound, word, and situational avoidance as well as secondary features.	2.20 (.186)	4.20 (.117)	.000 *
9.	Utilize available and appropriate diagnostic tests to assess stuttering and associated behaviors.	1.90 (.852)	4.10 (.553)	.000 *
10.	Identify and measure environmental variables (e.g. time pressure, emotional reactions, interruptions, nonverbal behavior, demand speech, or the speech of significant others) that may be related to stuttering.	2.15 (.745)	3.95 (.605)	.000 *
11.	Answer client's and parent's questions related to the cause of stuttering.	1.50 (.688)	3.75 (.716)	.000 *
12.	Answer client's and parent's questions related to the incidence of stuttering.	1.60 (.681)	3.60 (.754)	.000 *
13.	Answer client's and parent's questions related to the chances of recovery from stuttering.	1.65 (.671)	4.00 (.725)	.000 *
14.	Explain clearly to clients and/or their family members various treatment options and their evidence base.	1.75 (.910)	3.80 (.768)	.000 *
15.	Construct a treatment program, based on the results of comprehensive testing that fits the unique needs of each client.	1.80 (.894)	4.00 (.562)	.000 *
16.	Flexibly adapt the treatment program to meet the specific needs of the client and family.	2.45 (.945)	4.20 (.523)	.000 *
17.	Utilize counselling skills to address feelings, attitudes,	2.95	4.15	.001 *

	and coping strategies of clients and their families.	(.945)	(.587)	
18.	Identify when the experience of stuttering leads to avoidance, postponement, struggle, and secondary behaviors.	2.60 (.883)	3.85 (.745)	.000 *
19.	Help clients work towards normal fluency and natural sounding speech.	2.45 (.945)	4.20 (.616)	.000 *
20.	Help clients and families work to become more accepting of stuttering.	3.10 (.912)	4.40 (.598)	.000 *
21.	Help clients and families make treatment decisions in accordance with the ASHA's Code of Ethics.	2.80 (.894)	4.10 (.788)	.000 *
22.	Implement a variety of procedures to achieve transfer and maintenance of changes achieved in the clinical setting with PWS.	2.20 (.696)	4.20 (.523)	.000 *
23.	Help clients develop a plan for managing the variability of stuttering.	2.15 (.813)	4.10 (.553)	.000 *
24.	Find reliable information about stuttering on the internet.	4.00 (.725)	4.50 (.513)	.014
25.	Connect a client and/or family with a support group for PWS.	3.11 (1.197)	4.37 (.761)	.001 *
26.	Write evaluation and therapy reports that explain the nature of the client's stuttering and its treatment for the client and family.	2.20 (.894)	4.00 (.649)	.000 *
27.	Accurately identify the onset characteristics of stuttering.	2.10 (.788)	3.75 (.716)	.000 *
28.	Identify the core behaviors of stuttering.	2.40 (.754)	4.15 (.671)	.000 *
29.	Accurately tally stuttering disfluencies.	2.85 (.933)	4.10 (.641)	.000 *
30.	I am comfortable working with adults who stutter.	3.00 (1.298)	4.20 (.616	.006
31.	I am comfortable working with adolescents who stutter.	3.10 (1.334)	4.05 (.605)	.016
32.	I am comfortable working with children who stutter.	3.20 (1.281)	4.05 (.605)	.028
33.	I am comfortable working with parents of children who stutter.	3.00 (1.338)	3.90 (.641)	.025
34.	I am comfortable working with a person who stutters from another country.	2.40 (1.231)	3.95 (.826)	.001 *

*(significant)

Table 2. Focus Group Questions.

What did you learn from the class as a whole this semester?
What did you learn from watching the therapy sessions and interviewing a person who stutters that you feel you could not have learned from a lecture, reading a book, or participating in a classroom discussion?
What did you learn from following the clients each week and writing SOAP notes?
What did you learn from interviewing your client?
What parts of the class besides the teletherapy experience were important to your learning, and what did you learn from them?
You may have already answered this, but: How did the teletherapy experience integrate with the class as a whole?
What did you learn about being a therapist from this class, and which aspect of the class helped you the most as a future therapist?
What were your favorite and least favorite parts of the class?
What would you do differently as a class member if you were to retake the class?
What aspect of the class could be changed to make it better?

Table 3. Student responses to Likert-scale questions in percentages.

Item	Time	1 (very uncomfortable)	2	3	4	5 (very comfortable)
Identify fluent or stuttered speech by describing continuity, rate, and effort.	Pre	15	55	25	5	0
	Post	0	0	18	59	23
Identify disfluencies by type (blocks, prolongations, repetitions, etc.).	Pre	15	10	50	25	0
	Post	0	0	5	23	73
Describe effortful behavior and its anatomic /physiological source (e.g vocal straining) as it relates to stuttering.	Pre	50	35	10	5	0
	Post	0	0	23	68	9
Address the needs, values, and cultural/linguistic backgrounds of the client and family when conducting assessment and/or treatment for stuttering.	Pre	5	45	25	25	0
	Post	0	5	9	68	18
Differentially diagnose developmental stuttering from other fluency disorders such as cluttering, neurogenic, and psychogenic stuttering, as well as malingering.	Pre	55	45	0	0	0
	Post	5	9	55	28	9
Differentiate between a child's normally disfluent speech, the speech of a child at risk for stuttering, and the speech of a child who has already begun to stutter.	Pre	55	30	15	0	0
	Post	0	5	32	59	5
Obtain representative speech samples to evaluate for stuttering frequency, duration of stuttering, and speech rate.	Pre	20	40	30	10	0
	Post	0	0	14	46	41
Assess clients' use of sound, word, and situational avoidance as well as secondary features.	Pre	20	45	30	5	0
	Post	0	0	9	69	23
Utilize available and	Pre	35	45	15	5	0

appropriate diagnostic tests to assess stuttering and associated behaviors.	Post	0	0	9	68	23
Identify and measure environmental variables (e.g. time pressure, emotional reactions, interruptions, nonverbal behavior, demand speech, or the speech of significant others) that may be related to stuttering.	Pre	15	60	20	5	0
	Post	0	0	18	64	18
Answer client's and parent's questions related to the cause of stuttering.	Pre	60	30	10	0	0
	Post	0	9	23	55	13
Answer client's and parent's questions related to the incidence of stuttering.	Pre	50	40	10	0	0
	Post	0	9	37	40	14
Answer client's and parent's questions related to the chances of recovery from stuttering.	Pre	45	45	10	0	0
	Post	0	5	23	46	27
Explain clearly to clients and/or their family members various treatment options and their evidence base.	Pre	50	30	15	5	0
	Post	0	5	23	55	18
Construct a treatment program, based on the results of comprehensive testing that fits the unique needs of each client.	Pre	45	35	15	5	0
	Post	0	0	14	68	18
Flexibly adapt the treatment program to meet the specific needs of the client and family.	Pre	20	25	45	10	0
	Post	0	0	5	73	23
Utilize counselling skills to address feelings, attitudes, and coping strategies of clients and their families.	Pre	5	30	30	35	0
	Post	0	0	9	68	23
Identify when the experience of stuttering leads to avoidance,	Pre	10	35	40	15	0

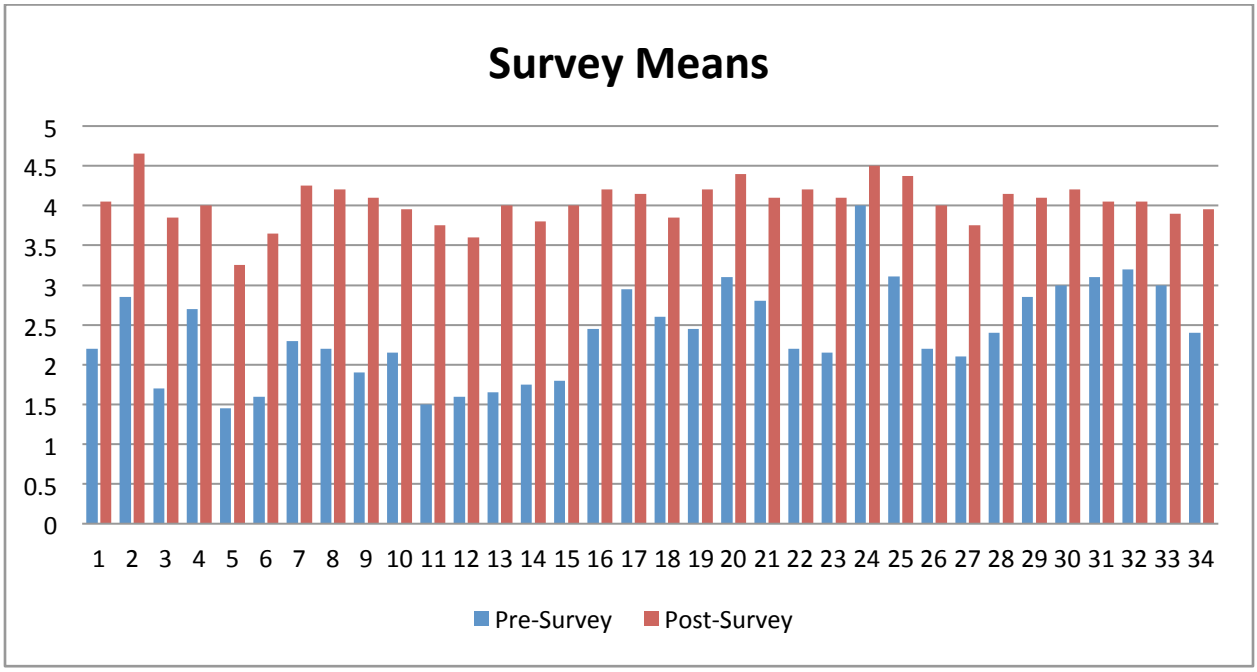
postponement, struggle, and secondary behaviors.	Post	0	0	32	50	18
Help clients work towards normal fluency and natural sounding speech.	Pre	10	55	15	20	0
	Post	0	0	9	59	32
Help clients and families work to become more accepting of stuttering.	Pre	0	35	20	45	0
	Post	0	0	5	55	41
Help clients and families make treatment decisions in accordance with the ASHA's Code of Ethics.	Pre	0	45	35	15	5
	Post	0	5	14	55	27
Implement a variety of procedures to achieve transfer and maintenance of changes achieved in the clinical setting with PWS.	Pre	10	65	20	5	0
	Post	0	0	5	68	27
Help clients develop a plan for managing the variability of stuttering.	Pre	20	50	25	5	0
	Post	0	0	9	68	23
Find reliable information about stuttering on the internet.	Pre	0	5	10	65	20
	Post	0	0	5	50	46
Connect a client and/or family with a support group for PWS.	Pre	15	10	25	40	10
	Post	0	5	5	48	43
Write evaluation and therapy reports that explain the nature of the client's stuttering and its treatment for the client and family.	Pre	25	35	35	5	0
	Post	0	0	18	64	18
Accurately identify the onset characteristics of stuttering.	Pre	15	70	5	10	0
	Post	0	5	32	55	9
Identify the core behaviors of stuttering.	Pre	10	45	40	5	0
	Post	0	0	14	59	27
Accurately tally stuttering	Pre	5	35	30	30	0

disfluencies.						
	Post	0	0	14	64	23
I am comfortable working with adults who stutter.	Pre	20	10	30	30	10
	Post	0	0	9	59	32
I am comfortable working with adolescents who stutter.	Pre	20	5	35	25	15
	Post	0	0	14	64	23
I am comfortable working with children who stutter.	Pre	15	10	30	30	15
	Post	0	0	14	64	23
I am comfortable working with parents of children who stutter.	Pre	20	10	35	20	15
	Post	0	0	23	64	14
I am comfortable working with a person who stutters from another country.	Pre	30	25	25	15	5
	Post	0	5	18	50	27

Table 4. Student perceptions of the most important aspects of the class.

Class Component	Median	Mode
Watching teletherapy videos of clients who stutter and writing SOAP Notes.	1.00	1
Having a professor who stutters teach the class	3.00	2
Interviewing a person who stutters on google hangout	3.50	4
Completing the pseudostuttering assignment	3.50	4
Participating in ISAD online conference	5.00	5
Keeping a weekly journal about stuttering	6.00	6
Reading the textbook	7.00	7

Figure 1. Pre- and Post Class Student Perceptions



Appendix A. Initial Survey Demographic/Background Questions

1.	Did you have an undergraduate course in Stuttering/Fluency Disorders?	YES	NO
1a.	If YES, was it a full or half-class (i.e., "Voice and Stuttering")	FULL	HALF
2.	Have you ever had a class taught by a person who stutters (PWS) before?	YES	NO
3.	Are you a PWS?	YES	NO
4.	Have you ever had any clinical experience with a PWS before?	YES	NO
4a.	If YES, can you list how many clients and their ages? Number of clients _____ Approximate ages?_____		
5.	Do you now or have you ever had family members or close friends who stutter?	YES	NO
6.	Have you ever known anyone (other than a faculty member) who stutters?	YES	NO
7.	What is your current age? _____		
8.	What is your gender?	F	M

Appendix B. Post Survey Opinion Questions

A. For questions 1 to 3, please circle your answer:

1. I enjoyed the teletherapy aspect of the class.

Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*

2. The use of teletherapy increased my knowledge about treating people who stutter.

Strongly Agree *Agree* *Neutral* *Disagree* *Strongly Disagree*

3. The amount of time I spent working on this class was:

Less than *Equal to* *More than* the average graduate class I have taken.

4. Please RANK the following aspects of the class from 1 to 7 in order of (1) "most important to increase my knowledge of stuttering, people who stutter, and therapy for people who stutter" to (7) "least important to increase my knowledge of stuttering, people who stutter, and therapy for people who stutter."

___completing the pseudostuttering assignment

___having a professor who stutters teach the class

___interviewing a person who stutters on Google Hangouts

___keeping a weekly journal about stuttering

___participating in the International Stuttering Awareness Day online conference

___reading the textbook

___watching the teletherapy videos of clients who stutter and writing SOAP notes

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